The American FERTILIZER

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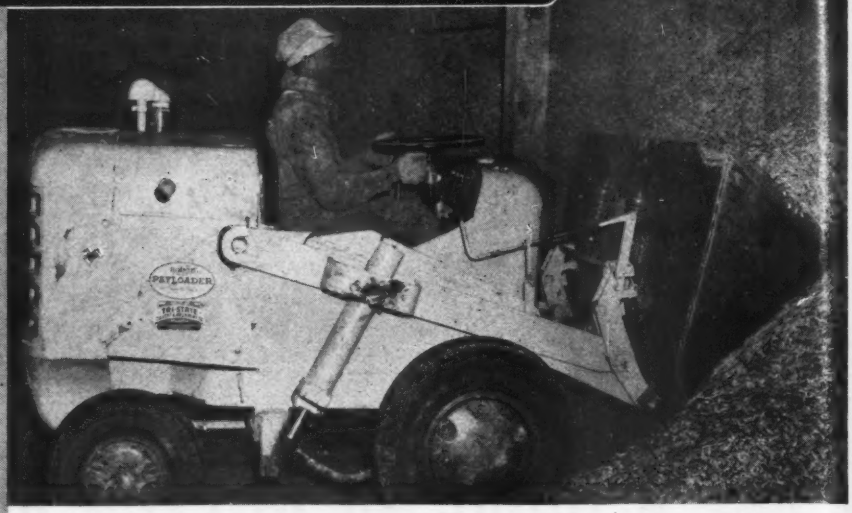

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The American FERTILIZER

Vol. 105 JULY 27, 1946 No. 2

Agricultural Research and the Fertilizer Industry*

By ROBERT M. SALTER

Chief, Bureau of Plant Industry, Soils, and Agricultural Engineering, Agricultural Research Administration, U. S. Department of Agriculture

I WELCOME this opportunity to meet with you in your first annual convention of the American Plant Food Council. Your organization and ours—that part of the United States Department of Agriculture dealing with research in the fields of plants, soils, fertilizers and agricultural engineering—represent a community of interest. We both serve the American farmer, and through him the Nation and ourselves.

We in research are interested in the problems of your industry since only through you can much of our research find application on the farm. We believe your industry is equally interested in the job that we in agricultural research are trying to do, since your future development and prosperity must depend in no small degree on how well our job is done. The difficulties of the fertilizer industry in meeting the expanded demands of the war period are almost over. The time approaches when further expansion of your industry, or perhaps mere maintenance of current output, will depend on the establishment of additional profitable uses for plant food. Scientific research is the key to this problem.

We have just won a world-wide conflict in which the scales of victory were finally tipped in our favor by superior technology and production. The phenomenal record of American agriculture looms large in the total picture of victory. The total volume of agricultural production was half again as large in World War II as in World War I, this in spite of 10 per cent fewer workers on farms and no greater acreage of crop land. The volume of products per worker was 75 per cent more, and the volume per acre 50 per cent more than during World War I.

This miracle of increased production just could not have happened without the "know how" gained from the intervening quarter century of scientific research. In saying this, I would not detract from the great credit due the farmers of the Nation, who, young and old, worked hard, long days under many handicaps. But it was scientific research that put into the farmer's hands the machines that were largely responsible for multiplying the output of his labor. It was scientific research that permitted him to grow on 2 acres crops that required 3 acres in 1917. It was scientific research that increased the pounds of meat, milk and eggs that he was able to produce from each ton of hay or bushel of grain.

You all know the story of hybrid corn, which by conservative estimate added 2 billion bushels to the Nation's corn crop during 3 war years. For the first time, we pushed our wheat crop above the billion bushel mark, a feat possible only because of rust-resistant varieties developed since the first world war. New disease-resistant oat varieties, released just before World War II, quickly spread over

* An Address at the First Annual Convention, American Plant Food Council, Hot Springs, Virginia, June 25, 1946

the Middle West and in one state alone, Iowa, added 109 million bushels to the oat crop in 3 war years. The story is much the same for the other crops—new soybean varieties producing higher yields and more oil, sugar beets resistant to the destructive curly top and leaf spot diseases, potatoes resistant to blight and scab, and many others.

In addition to these contributions of the plant breeder the farmer had at his disposal more effective controls for plant pests in the form of new and more powerful fungicides and insecticides and more efficient machines for their application.

A quarter century's research had added much to our knowledge of soil management and to the quality of materials available for soil improvement. Much had been learned about the significance of soil reaction and how to control it, about ways to reduce erosion and conserve water for growing crops, about the use of crop rotations, legumes and green manures for replenishing soil humus and nitrogen, about procedures for determining the nutrient needs of crops and about materials, methods, and machines for meeting these needs efficiently.

Advances in Fertilizer Chemistry

Since we are considering what research means to the fertilizer industry, let us look specifically for a moment at the advances in the manufacture and use of fertilizers since World War I. To the extent that these advances contributed to wartime production, and they did contribute enormously, we in research are glad to share the credit with you of the fertilizer industry.

It is now an old story, but the development of the domestic synthetic ammonia industry is an outstanding example of applied research. The Nation is no longer dependent on foreign sources of nitrogen and per unit cost to farmers has steadily decreased over a 20-year period. This development also paved the way for adding free ammonia directly to mixed fertilizers, thus utilizing nitrogen in its cheapest form and at the same time greatly improving the physical condition of the mixtures.

Perhaps of equal importance is the large scale conversion of synthetic ammonia into ammonium nitrate, physically suitable for use in fertilizers. This, the major fertilizer development of World War II, made it possible to meet greatly expanded wartime requirements for fertilizer nitrogen. The fact that the consumption of solid ammonium nitrate as fertilizer increased from zero in 1942 to about 300,000 tons in the year ending June 30, 1945 reflects the close coordination of governmental and industrial research.

Technical advances mark the path of research on the other fertilizer elements, although in some cases there have been economic limitations to wide adoption. In the case of phosphates the low cost and high quality of ordinary superphosphates have limited the adoption of such achievements as the sulphuric acid process for producing double superphosphate and the electric-furnace process for elemental phosphorus and phosphoric acid. The same applies to the method of producing alpha-phosphate, or defluorinated phosphate rock, by heating in the presence of silica and water which gives a product suitable both for fertilizer and for animal feed.

Development of the domestic potash deposits is, of course, the outstanding achievement of the potash industry. The Nation's requirements can be and are now being met entirely from domestic sources. This development benefited from years of research, which incidentally made possible the 60 per cent grade of muriate we now use instead of the 50 per cent foreign product of a few years ago.

Fertilizer Progress

Granulation is another significant contribution to fertilizer technology, and it appears that the time is not far off when granular superphosphate will be the rule rather than the exception. Development of flotation of phosphate rock is another landmark, as it brings literally millions of tons of low-grade phosphate rock into the sphere of economic usefulness.

Probably the most important criterion of advancing technology in the fertilizer industry has been the steadily increasing plant food content of mixed fertilizers, from an average of 13.9 per cent in 1920 to 21.3 per cent in 1944, and the fact that the physical condition of mixed fertilizers has improved at the same time.

Side by side with improvements in technology have come improvements in the use of fertilizers. Most significant is the increase in total tonnage of plant food used on American farms which now stands at about 270 per cent of what was being applied three decades ago. This increase reflects the integrated effect of literally thousands of field and laboratory experiments that have been conducted throughout the nation.

Not only has total tonnage increased, but fertilizer use has expanded substantially in regions which used little or none a few dec-

(Continued on page 24)

Phosphate Rock Industry of the United States in 1945

Several new records were made in the domestic phosphate rock industry in 1945, according to reports submitted by operators to the Bureau of Mines, United States Department of the Interior. Total mined production reached a new high at 5,399,739 long tons, and the quantity mined in Florida (3,814,935 tons) and the Western States (323,955 tons) were also new records. Phosphate rock sold or used by producers in 1945 also made a new peak of 5,806,723 tons, over four hundred thousand tons greater than in 1944, with a value of $23,951,077, in turn about three million dollars above the 1944 value. The marketed production from Florida and also the Western States was also greater than ever before. Sales of Tennessee rock were less. Imports again increased markedly, reaching 141,658 long tons. Exports were greater by about 50,000 tons. Apparent domestic consumption reached nearly five and one-half million tons. Stocks at the end of 1945 had decreased about one-third, the decline being chiefly in Florida. The P_2O_5 content of the domestic phosphate rock sold or used in 1945 was at a new high—1,884,035 long tons.

Outlook

Unsatisfactory conditions still prevail in the world's phosphate rock industry, and appear

SALIENT STATISTICS OF THE PHOSPHATE-ROCK INDUSTRY IN THE UNITED STATES, 1944–45.

	1944			1945		
	Long tons			Long tons		
	Rock	P_2O_5 content	Value at Mines	Rock	P_2O_5 content	Value at Mines
Production (mined)	5,200,002	1,673,860	(1)	5,399,739	1,737,185	(1)
Sold or used by producers:						
Florida:						
Land pebble	3,670,208	1,241,519	$13,136,472	4,103,022	1,382,950	$15,578,980
Soft rock	60,087	12,526	259,523	71,715	15,050	293,433
Hard rock	22,500	8,056	138,952	63,491	22,613	426,061
Total Florida	3,752,795	1,262,101	$13,534,947	4,238,228	1,420,613	$16,298,474
Tennessee[2,3]	1,324,849	381,621	5,975,337	1,294,297	375,370	6,062,688
Idaho	112,565	35,804	584,400	123,340	38,984	673,627
Montana	186,434	59,963	761,745	150,858	49,068	916,288
Virginia	(3)	(3)	(3)	(3)	(3)	(3)
Total United States	5,376,643	1,739,489	$20,856,429	5,806,723	1,884,035	$23,951,077
Imports[4]	123,414	(1)	1,005,132	141,658	(1)	1,112,526
Exports	438,133	(1)	[5]3,460,916	[6]489,566	[6]166,090	[6]2,774,144
Apparent consumption[7]	5,061,924	(1)	.....	5,458,815	(1)	.....
Stocks in producers' hands, December 31						
Florida	815,000	273,000	(1)	388,000	129,000	(1)
Tennessee[2,3,8]	410,000	115,000	(1)	411,000	113,000	(1)
Western States	2,000	1,000	(1)	47,000	15,000	(1)
Total stocks	1,227,000	389,000	(1)	846,000	257,000	(1)

[1] Data not available.
[2] Includes sintered matrix.
[3] Virginia included with Tennessee.
[4] Market value (or price) at port and time of exportation to the United States.
[5] Value at port of exportation.
[6] Quantity and value f.o.b. mines as reported by producers.
[7] Quantity sold or used by producers plus imports minus exports.
[8] Includes brown-rock matrix of sinter grade, sintered brown rock, blue rock, and some matrix of washer grade.

likely to continue for a considerable time. Rehabilitation of the industry in the former major producing countries in Africa and the Far East has been slow. The situation resulting from the shortage of phosphate supplies due to these delays is aggravated by the threat of famine in many countries. In the United States the production of phosphate rock is still supported by the Government guarantee of 90 per cent parity to farmers, together with the demand for export crops and fertilizer for export. The abnormal domestic production and consumption of phosphate rock may be expected to continue pending recovery in other producing areas, the satisfaction of demands from non-producing phosphate- consuming countries, the disappearance of the famine threat, or major financial difficulties.

Production

A new high record was made in 1945 in the quantity of phosphate rock mined in the United States with a total of 5,399,739 long tons. The increase was largely due to the much greater quantity mined in Florida, and to a less extent to the increase in the mined production of the Western States. These more than counter-balanced the considerable decline in Tennessee. Phosphate rock was mined in 1945 in Florida, Tennessee, Montana, and apatite in Virginia.

PHOSPHATE ROCK MINED IN THE UNITED STATES, 1941–45, BY STATES, IN LONG TONS

Year	Florida	Tennessee[1]	Western States	United States
1941....	3,417,900	[2]1,301,067	203,216	4,922,183
1942....	2,984,503	[2]1,568,162	266,273	4,818,938
1943....	3,274,266	[2]1,868,407	227,294	5,369,967
1944....	3,486,482	1,413,246	300,274	5,200,002
1945....	3,814,935	1,260,849	323,955	5,399,739

[1]Includes small quantity of apatite from Virginia.
[2]Includes some matrix of washer grade.

PHOSPHATE ROCK SOLD OR USED BY PRODUCERS IN THE UNITED STATES, 1941–45.

Year	Long Tons	Value at Mines Total	Average
1941.....	4,689,652	$15,596,273	$3.33
1942.....	4,644,240	16,597,492	3.57
1943.....	5,126,232	18,962,021	3.70
1944.....	5,376,643	20,856,429	3.88
1945.....	5,806,723	23,951,077	4.12

Sales

A new high record in the quantity of domestic phosphate rock sold or used by producers, 5,806,723 long tons, was made in 1945, exceeding the previous maximum, that of 1944, by 430,080 tons. The total value was over three million dollars more that that of 1944, owing partly to the increased sales and partly to a higher average value. which rose from $3.88 in 1944 to $4.12 in 1945.

Distribution of Sales

As in 1944, the most popular grades of phosphate rock sold or used by producers in the United States in 1945, according to reports from them, were the 72 and the 75–74 per cent B.P.L. grades, although marked increases are to be noted in the 70 and the 68–66 per cent B.P.L. grades. Over 72 per cent of the domestic phosphate rock sold or used by producers in 1945 was of 70 per cent B.P.L. or higher grades. The quantity pf phosphate rock containing less than 60 per cent B.P.L. sold or used declined in 1945, forming in that year but nine per cent of the total.

PHOSPHATE ROCK SOLD OR USED BY PRODUCERS IN THE UNITED STATES, 1944–45, BY GRADES AND USES

	1944 Quantity		1945 Quantity	
	Long Tons	Per cent of Total	Long Tons	Per cent of Total
Grades—B.P.L.[1] content (per cent):				
Below 60.....	669,228	12	523,580	9
60 to 66.....	210,561	4	268,253	5
68 basis, 66 min...	223,935	4	447,882	8
70 minimum.....	672,218	13	916,513	16
72 minimum.....	1,291,850	24	1,251,427	21
75 basis, 74 min...	1,107,149	21	1,177,286	20
77 basis, 76 min...	883,815	16	895,814	15
Above, 85 (apatite)				
Undistributed[2]	317,887	6	325,968	6
	5,376,643	100	5,806,723	100
Uses:				
Domestic:				
Superphosphates .	3,681, 74	69	3,945,009	68
Phosphates, phosphoric acid, phosphorus, ferrophosphorus.....	890,633	17	816,843	14
Direct application to soil.....	256,736	5	411,543	7
Fertilizer filler....	19,008	–	14,493	–
Stock and poultry feed.....	55,944	1	63,525	1
Undistributed....	27,932	–	65,744	1
Exports.....	445,116	8	489,566	9
	5,376,643	100	5,806,723	100

[1]Bone phosphate of lime.
[2]Includes numerous grades of B.P.L. content from 65.9 to 85 per cent.

The quantity of domestic phosphate sold or used by producers in the United States for the production of superphosphates is reported to have been nearly 300,000 tons greater in 1945 than in 1944, although its percentage of the total declined slightly . Increases were also registered in the amounts for direct ap-

(Continued on page 26)

July Crop Report Encouraging

The current outlook for total crop production has seldom been surpassed, according to the U. S. Department of Agriculture. A record corn crop and near-record crops of wheat, oats, potatoes and rice appear in prospect. Except for 1942, the reported condition of all crops is the best in seven years. Milk and eggs were being produced at near-record levels. The combined acreage of all crops for harvest in 1946 has been exceeded since 1932 only in the past three years. Indicated yields of most crops are above average. These are some of the signs pointing to another big crop year in 1946.

The relatively large aggregate crop production in prospect for 1946 is all the more desirable because of the heavy contribution to the total made by vitally needed food and feed crops. The third consecutive billion-bushel wheat crop will be the second largest of record. Rye production will be the smallest since the drought years, but rice will be at a near-record level. The combined output of feed grains may be the largest ever produced, with prospective production of all corn setting a new high mark and a second 1½ billion bushel oats crop nearly up to that of 1945, though barley is the shortest crop since 1937. The expected tonnage of hay is below the level of the past four years, but the carryover of old hay is large. Oilseed crops are receding from the high wartime levels with the production of soybeans and flaxseed down sharply and a small decline in the acreage of peanuts. Large crops of tabacco, potatoes, vegetables, citrus and most other fruits are expected, but dry beans and sweet potatoes will be below average. Pastures and ranges, except in the Southwestern drought area, are providing abundant feed despite heavy grazing which began earlier than usual this spring.

The aggregate of 52 crops for harvest is indicated on July 1st at nearly 346,000,000 acres. This total is about 700,000 acres (0.2 per cent) less than that harvested in 1945. Of the years since the 1928–1932 period, when harvested acreages ranged between 351,000,000 and 362,000,000 acres, the 1946 acreage exceeds any except the past three years.

TOTAL PRODUCTION (In Thousands)

Crop	Average 1935–44	1945	Indicated July 1, 1946
Corn, all ..... bu.	2,608,499	3,018,410	3,341,646
Wheat, all ..... "	843,692	1,123,143	1,090,092
Winter ..... "	618,019	823,177	857,163
All spring ..... "	225,673	299,966	232,929
Durum ..... "	31,900	35,020	26,089
Other spring . "	193,774	264,946	205,840
Oats ..... "	1,129,441	1,547,663	1,471,026
Barley ..... "	289,598	263,961	230,278
Rye ..... "	42,356	26,354	20,897
Flaxseed ..... "	23,426	36,688	20,149
Rice ..... "	55,257	70,160	68,829
Hay, all tame .... ton	80,254	91,573	83,273
Hay, wild ..... "	11,051	13,378	11,095
Hay, clover and timothy ..... "	25,540	32,592	30,744
Hay, alfalfa ..... "	29,886	33,671	29,489
Beans, dry edible .. 100 lb. bag	16,408	13,578	15,276
Peas, dry field .... "	4,580	5,594	6,322
Potatoes ..... bu.	372,756	425,131	431,672
Sweet potatoes ... "	66,422	66,836	65,326
Tobacco ..... lb.	1,479,621	1,997,808	2,126,246
Sugarcane for sugar & seed ... ton	5,873	6,767	6,658
Sugar beets ..... "	9,568	8,668	10,916
Hops ..... lb.	39,631	56,128	58,387
Apples, com'l crop ..... bu.	120,962	68,042	106,465
Peaches ..... "	59,938	81,564	82,838
Pears ..... "	29,002	34,011	33,087
Grapes ..... ton	2,553	2,792	2,713
Cherries (12 States) ..... "	160	148	189
Apricots (3 States) ..... "	236	194	331

American Cyanamid Promotes Allen

American Cyanamid Company, Agricultural Chemicals Division, has announced the appointment of Ralph F. Allen as district sales manager for the states of Georgia and Florida. Mr. Allen, who already has assumed his new duties, will make his headquarters at the American Cyanamid Company's offices at Brewster, Florida. He formerly was district sales supervisor in Georgia. Previous to his Georgia activities Mr. Allen represented the Agricultural Chemicals Division of his company in Mississippi and Louisiana, and originally in Virginia.

In his new capacity Mr. Allen will handle all sales in his district of "Aero" Cyanamid, Aero Defoliant, a chemical dust for removing leaves from cotton and other plants, and Aero-Phos.

Gettinger Resigns from Smith-Douglass Co.

The Smith-Douglass Co., Norfolk, Va., has announced the resignation of C. E. Gettinger from the office of vice-president. Mr. Gettinger has been associated with the company and its subsidiary, Smith-Rowland Co., manufacturers of process tankage, since 1931. The resignation will take effect later in the summer, when Mr. Gettinger expects to engage in business for himself.

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Principal Articles in This Issue

Fertilizer Production Prospects Improved

The outlook for the coming fertilizer year which runs from July 1, 1946, to June 30, 1947, is apparently brighter than it was a few months ago. According to a summary prepared by the Civilian Production Administration, it would seem that there will be 9 per cent more fertilizer material available for agricultural purposes than was used during the 1945–46 season.

The greatest increase is expected in phosphatic materials which will supply 1,500,000 tons of P_2O_5, as compared with 1,317,350 tons in 1945–46, an increase of 14 per cent.

Potash is expected to show an increase of 5 per cent, from 726,773 tons of K_2O in 1945–46 to 766,009 tons in 1946–47.

The increase in nitrogen will be only about 2 per cent, to 715,908 tons, an advance of 16,790 tons over the past year.

While the total nitrogen production will undoubtedly be considerably higher than this, a very sizable tonnage has been earmarked for shipment abroad by UNRRA. A part of this export material will be produced in government operated plants.

It is needless to say that all of the above figures are contingent upon production being uninterrupted by strikes or transportation failures. The past year has shown that these are factors which should be taken into consideration, however, in making any estimates of production.

While the fertilizer industry could find a market for tonnage much greater than the above, the figures would indicate a successful season for the industry and relatively adequate quantities of fertilizer to meet the needs of agriculture in this country.

N. F. A. Press Luncheon

A luncheon to which representatives of the trade press and trade associations were invited, was held by the National Fertilizer Association at the Statler Hotel, Washington, on July 16th.

There were about 50 in attendance at the luncheon which was presided over by D. S. Murph, secretary and treasurer of the association.

Mr. Murph introduced Maurice H. Lockwood, the association's newly elected president, who spoke briefly on the situation in the

fertilizer industry and the program of the association for the coming year.

Mr. Lockwood then invited questions from the representatives present and a number of the guests joined in the discussion which followed.

Bailey E. Brown Appointed to Summers Fertilizer Staff

J. E. Totman, president of the Summers Fertilizer Company, Baltimore, has announced the appointment of Bailey E. Brown, formerly Senior Biochemist of the Bureau of Plant Industry, Soils, and Agricultural Engineering, U. S. Department of Agriculture, as Director of Soil and Fertilizer Research. His research activities will center in the potato-producing sections of the Northeastern states. He will assume his duties on July 29th.

Bailey E. Brown

The Summers Fertilizer Company also announces that it is establishing a research fund as a means of promoting potato soil and fertilizer research to be coordinated by the Director. This fund is estat lished for a long-range program, which will be carried on in cooperation with agricultural agencies wherever such projects are deemed mutually desirable.

From the time of his graduation in chemistry and agriculture from the Alabama Polytechnic Institute in 1900, Professor Brown has been actively engaged in soil and fertilizer research in the U. S. Department of Agriculture. During the first 15 years with the Department, his duties were in the laboratory and greenhouse, with assignments to the Rhode Island, New York (Cornell) and Missouri Agricultural Experiment Stations for the purpose of conducting investigational studies in determining the nutrient requirements of soils by means of selected indicator crop plants. From 1907 to 1911 he conducted investigational studies at the Pennsylvania Agricultural Experiment Station on the long-established Jordan soil-fertility four-year rotation plots at State College, Pa. While on this assignment he held the title of Assistant Professor of Experimental Agronomy and was instrumental in the establishment of an excellent soil research laboratory.

Since 1915 Professor Brown has devoted practically his entire time—over 30 years—to soil and fertilizer research on the potato crop in the Northeastern and North Central potato-producing states. Among his numerous cooperative studies have been the evaluation of new nitrogen and phosphate materials, fertilizer rate and ratio, potash and magnesium-hunger, fertilizer placement, the use of minor elements in potato fertilizer and effect of irrigation on potato production. He is the author of a variety of articles on fertilizer use for potatoes, is well known and held in high esteem by potato growers and experiment station workers throughout the potato-producing states. He is a member of the American Association for the Advancement of Science, the Potato Association of America, the American Society of Agronomy, Soil Science Society of America, and the American Society for Horticultural Science.

Soil Building Dividends

The notion that soil building is always a long and tedious process is being refuted these days by Dr. Roy L. Donahue, associate professor of agronomy for Texas A. and M. College. One season is sufficient, he thinks, to prove the dollars-and-cents value of a good soils program. He cites the case of Fred P. Swann of Smith County, Texas. Mr. Swann reports: "One day I run my cattle on the phosphated pasture and the next day they are grazed on the non-phosphated part. Each day they are on the phosphated pasture, I get about 10 gallons more milk."

Tag Sales for 1945-46 Increase 10 Per Cent

Another new high peak was registered in the sales of fertilizer tax tags in the fiscal year ended June 30, 1946, when sales rose to an equivalent of 8,367,000 tons, an increase of 776,000 tons, or 10 per cent more than in the previous fiscal year. Reports to the National Fertilizer Association show that the tags sold in 13 of the 16 states were above the preceding year with the tags sold in the remaining three states just below the previous year. The 11 Southern states reported an 8 per cent increase while the increase in the five midwestern states amounted to 20 per cent. This marked the eighth consecutive fiscal year in which an increase occurred.

The fiscal year sales continue to be significant, as is shown by the following table. The American farmers again cooperated with the fertilizer industry by earlier use and by buying and storing a large part of their fertilizer in the last six months of 1945 for use in their 1946 spring plantings, thereby spreading the sale of fertilizer more evenly throughout the year.

	July–December Tons	% of Total Fiscal Year	January–June Tons	% of Total Fiscal Year	Total Fiscal Year
1940–41	882,734	16	4,487,964	84	5,370,698
1941–42	1,012,015	18	4,533,872	82	5,545,887
1942–43	1,224,337	20	5,018,274	80	6,242,611
1943–44	2,076,637	29	4,996,734	71	7,073,371
1944–45	2,167,477	29	5,423,061	71	7,590,538
1945–46	2,427,183	29	5,940,316	71	8,367,499

FERTILIZER TAX TAG SALES—Short Tons
Compiled by The National Fertilizer Association

State	July–June						% of
	1940–41	1941–42	1942–43	1943–44	1944–45	1945–46	1944–45
Virginia	400,047	416,231	423,574	497,911	574,094	637,063	111
North Carolina	1,095,327	1,194,175	1,292,655	1,384,789	1,466,472	1,544,779	105
South Carolina	712,115	659,412	802,498	813,548	834,985	822,293	98
Georgia	793,601	788,111	988,191	1,062,629	1,079,056	1,131,587	105
Florida	557,252	630,264	624,602	794,600	813,940	985,653	121
Alabama	578,050	571,350	640,200	707,400	735,600	794,950	108
Tennessee	148,387	163,064	214,723	246,362	295,463	284,336	96
Arkansas	119,650	140,950	153,583	139,873	131,250	145,050	111
Louisiana	171,474	168,986	181,443	205,110	209,701	243,535	116
Texas	133,354	133,608	153,881	193,976	215,218	288,825	134
Oklahoma	10,790	11,386	16,494	17,586	25,969	38,958	150
Total South	4,720,047	4,877,537	5,491,844	6,063,784	6,381,748	6,917,029	108
Indiana	345,264	342,355	431,714	474,084	498,081	610,539	123
Illinois	62,101	78,838	86,905	141,031	231,274	280,333	121
Kentucky	124,799	140,736	144,952	230,872	282,217	294,312	104
Missouri	97,701	86,511	78,783	120,065	161,333	229,779	142
Kansas	20,786	19,910	8,413	36,535	35,885	35,507	99
Total Midwest	650,651	668,350	750,767	1,009,587	1,208,790	1,450,470	120
Grand Total	5,370,698	5,545,887	6,242,611	7,073,371	7,590,538	8,367,499	110

FERTILIZER MATERIALS MARKET

NEW YORK

No Improvement in Prospects forFuture Material Supplies. New Sulphate of Ammonia Price Awaited. Potash Allocations Expected Shortly. Foreign Materials Offered at Prices Beyond Domestic Levels. Organics Buyers Waiting for Leveling of Prices in Future.

Exclusive Correspondence to "The American Fertilizer"

NEW YORK, July 22, 1946.

There has been no change in the general conditions prevailing in the fertilizer materials markets during the past two weeks. Manufacturers are still endeavoring to gain commitments covering their requirements for materials over the new season, but the uncertainties pointed out in our last report still prevail. Contracts for delivery of potash salts will be concluded as soon as allocations to the fertilizer mixers are made known. Although some sort of announcement is expected momentarily, the sulphate of ammonia picture for the new season remains uncertain, and bookings are being delayed until a price schedule is agreed upon.

Imports of fertilizer materials continue to be considerably less than this time last year. Nitrate of soda and phosphates showed the largest decline. There are a few offerings from Europe and from South America, but prices asked are still very much above the domestic market.

Sulphate of Ammonia

Uncertainty prevails as to forward price schedule, and quantities that will be available to the fertilizer manufacturer. The demand for the new season far exceeds present production capacity.

Nitrate of Soda

Recent imports from Chile have replenished formerly depleted stocks in this area. Domestic production is reported to be higher due to the easier position of basic materials.

Organic Materials

Sales at above former ceiling prices have been reported on bone meal and dried blood, but buyers in general are not inclined to trade on this basis. There seems to be a tendency to await future developments in production and a feeling that prices will level off in the near future.

Superphosphate

Although contract prices for the new season have not been announced, recent shipments have been made at the old price level. Supplies continue to be tight and it is felt that the recent advance in phosphate rock will be reflected in this material shortly.

Phosphate Rock

Continuing delay in availability of new machinery and replacement parts has slowed down the program to increase production. Demand for the new season is greater than at any other time in the history of the industry, and most producers are completely sold up.

Potash

Due to the delay in the setting of allocations by the Civilian Production Administration, contracts for the next period are being held up. Settlement of this question is expected by August 1st at the latest. Price schedules as announced by the major producers will be on the same basis as last year, and it is anticipated that domestic demand will be satisfied in most areas.

CHARLESTON

Some Organics Offered at Almost Double OPA Ceilings. Phosphates in Tight Supply. Government to Produce UNRRA Nitrates.

Exclusive Correspondence to "The American Fertilizer"

CHARLESTON, S. C., July 22, 1946.

Organics remain tight with little relief, though prices have increased tremendously in some. Sulphate of ammonia for southern manufacturers particularly will be tight because of the new price basis of f. o. b. the mill.

Organics.—With OPA ceilings off for the time being, high prices are being paid for what supplies of blood, tankage, bone meal, etc., are available. These prices are paid

mostly by feed manufacturers, however, as the fertilizer trade balks at some of the figures. Blood has been reported sold at $10.50 per unit ammonia ($12.76 per unit N) and tankage quoted at $10.00 per unit ammonia ($12.15 per unit N). Hoof meal has been sold at $5.75 ($6.99 per unit N) at western producing points. Supply is far below demand but increased production by packing-houses is expected to ease the situation a bit. Order M-390 which allocates the bulk of chrome stock to glue manufacturers still hamstrings producers of nitrogenous tankage.

Ammonia Nitrate.—Heavy demand still exceeds supply. Increased production by next season forecasts some relief. The Federal Government will operate about 15 government-owned plants to supply Europe and Japan which will allow private producers more for domestic sale.

Nitrate of Soda.—Increased production of soda ash is improving supply of domestic nitrate of soda, though shipments remain behind schedule. Imports are improving slightly.

Phosphate Rock.—Demand remains greater than supply, but as Morocco and Nauru increase production, the situation is expected to ease somewhat. Car shortage in Florida slightly better, though some buyers complain of slow deliveries.

Potash.—No increase in price of muriate and contracts are being written for quantities according to each buyer's allocation. Prices cover period ending May 31, 1947.

Superphosphate.—Supply remains exceedingly tight with price for prompt shipment remaining at former figures. No new contract price has been announced.

Fish Scrap.—Fish catch is reported short of expectancy and little is being prepared for fertilizer market. Feed market continues to get bulk of fish production in the form of fish meal.

PHILADELPHIA

Higher Prices on Materials and Mixed Fertilizers Expected. Organics Soar to Record Levels. Potash Prices Unchanged.

Exclusive Correspondence to "The American Fertilizer"

PHILADELPHIA, July 22, 1946.

The outlook for raw materials is not too bright, and with prices upset in all directions the average mixer does not know what to expect. However, it is obviously certain that the mixed goods prices must be increased, and should raw materials be again put under control, their ceilings will be generally higher than last season. Rock, superphosphate, sulphate of ammonia, tankage, blood, fish are already higher, and nitrate of soda is threatening.

Sulphate of Ammonia.—There is no large movement at present and $30.00 per ton f. o. b. ovens seems to be the price. It is said that this figure had already been approved by OPA before June 30th last.

Nitrate of Soda.—The demand is still good, and importers are said to have met their commitments up to July 1, 1946. However, it is expected that importations for the 1946–47 season will be under the 1945–46 season. And the Chilean producers want more money. The domestic production has improved, but the outlook is not encouraging due to scarcity of soda ash.

Castor Pomace.—There seems to be no business in regular channels but some outside stuff has moved.

Blood, Bone, Tankage.—The feeding trade has seemed quite willing to absorb, at over $10.00 per unit of ammonia ($12.16 per unit N), all the blood and tankage that appeared on the market. Bone was likewise tagged at from $7.00 to $10.00 over previous prices. On the other hand, process tankage (known also as nitrogenous) which is primarily a fertilizer article, has been very seriously cut back in production due to lack of the various raw

by-products and wastes used in its manufacture. This is a real blow to the smaller mixer.

Fish Scrap.—While earlier reports of the general catch were quite discouraging, trading was quite active when the price reached $2.20 per unit of protein, then $2.25 and then over $2.30; in fact as high as $12.00 per unit of ammonia ($14.59 per unit N). Of course, this all went to the feeding trade.

Phosphate Rock.—Supply continues tight with no inventories possible. It is feared the demand will ease off unless, and until, superphosphate prices definitely reach a higher level.

Superphosphate.—Demand is active but there is no rush to sell until price becomes more settled. In some areas there has been an advance of five cents per unit, and it is thought this advance may become general.

Potash.—Domestic production is being maintained and shipments are still under regulations. Contracts said to have been made to May 31, 1947, at same prices as last year.

CHICAGO

No Fertilizer Organics Being Offered. Feed Materials Moving at Highest Prices on Record.

CHICAGO, July 22, 1946.

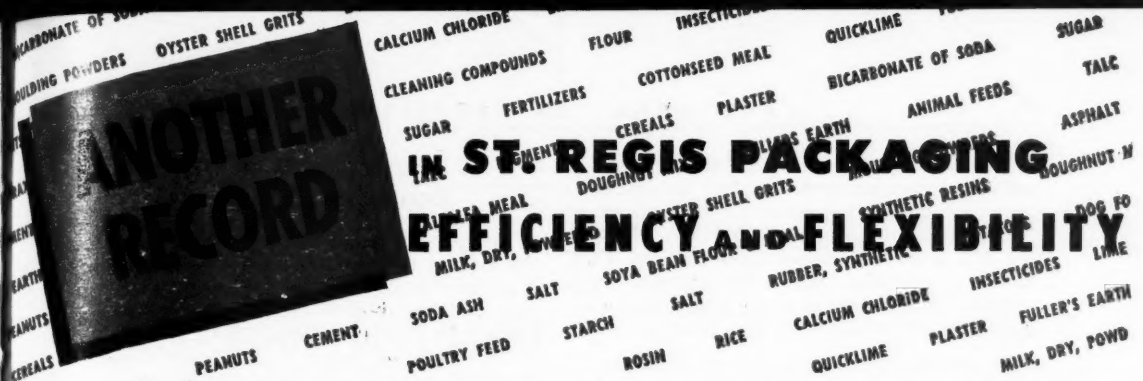
The temporary demise (at least) of CPA has not noticeably disturbed the fertilizer organic situation in this territory. No fertilizer tankage, blood or bone meal is being offered and nitrogenous is still scarce.

In feeds, prices have been rapidly advanced, wet rendered tankage moving at $10.50 per unit ammonia ($12.76 per unit N), and ground blood at from $10.00 to $10.50 per unit ammonia ($12.76 per unit N), f. o. b. production point. The high point of these articles, used in fertilizer, in 1920 was $8.50 ($10.33 per unit N) for blood and $7.85 ($9.54 per unit N) and 10 cents for tankage, basis f. o. b. Chicago.

Appropriation for Government Phosphate Plant Defeated

A recent attempt on the part of some Senators to increase government participation in the fertilizer manufacturing industry has been defeated by the vigilance of some of our non-socialistic-minded legislators.

When the Government Corporations Appropriation Bill (H. R. 6777) was brought to



California Grain Grower Saves $4.07 Per Acre with Multiwalls

This sixth in a series of Multiwall Case Histories tells how Murietta Farms in California made drastic savings in the packaging of barley, wheat and flax by changing over to St. Regis Multiwall Paper Valve Bags and Machine Packaging.

When jute bags became scarce in 1942, Mr. Giffen, operator of Murietta Farms, investigated the advantages and economies of Multiwall Bags and installed a St. Regis system tailor-made for his requirements — *here are the highlights:*

66⅔% SAVING IN BAG COSTS: Multiwalls cost only 8½¢ each as contrasted with 24½¢ for burlap bags. In addition, Multiwalls, with their multiple layers of tough kraft paper, offered positive protection against the elements.

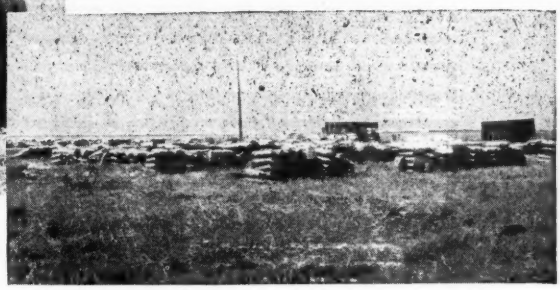
56% SAVING IN LABOR COSTS: By installing gravity-type packers and using Multiwall Paper Valve Bags, it was possible to eliminate the men formerly required to sew fabric sacks. In addition, the system made it possible to fill the bags at a central spot . . . eliminating the tiresome and costly collecting of sacks scattered over the fields.

MULTIWALLS SAVE CROP STORED IN OPEN FOR 6 MONTHS: During the harvesting seasons of 1944 and 1945, it was necessary to leave the filled Multiwall bags in the open for six months . . . from the end of harvesting until late in November. The grain in the Multiwalls remained in perfect condition. Mr. Giffen estimates that between ⅓ and ½ of the crop would have been lost through exposure if the grain had been packed in burlap.

EVEN GREATER SAVINGS IN '46: Figures for the 1946 crop indicate that Mr. Giffen will effect a saving of approximately $26,862. This is based on an average saving of $4.07 per acre through the use of paper instead of jute in the packaging of 3,500 acres of wheat and 3,100 acres of flax.

Multiwall Paper Valve Bags being filled from spouts on trailer.

Filled bags stacked at edge of field; no protection against the elements supplied or required.



MULTIWALL

ST. REGIS SALES CORPORATION

(Sales Subsidiary of St. Regis Paper Company)

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No. Kansas City, Mo. Orala, Fla. Oswego, N. Y. Seattle Toledo

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Without obligation, please send me full details regarding "Case History" No. 6, outlined above.

NAME_____

COMPANY_____

ADDRESS_____

vote in the Senate, an amendment had been added appropriating $3,000,000 for the construction of a phosphatic fertilizer plant at Mobile, Ala., to be operated by TVA. During the war several attempts were made by TVA to obtain priorities for materials needed in the construction of such a plant, and these were denied by the War Production Board.

When the amended Senate bill came up for conference with the House Committee, Representative Robert F. Rich called attention to the Mobile amendment and succeeded in having the House adopt a motion instructing its conferees to refuse to accept the appropriation. This motion was carried by a vote of 161 to 148. Meanwhile, on the floor of the Senate, Senator George of Georgia spoke strongly against the amendment.

When the Senate conferees seemed disposed to insist upon the appropriation being left in the bill, the House voted a second time to insist upon its elimination, the vote this time being 204 to 126.

The Senate therefore acceded to the House position and on motion of Senator McKellar of Tennessee, who had originally been one of the principal advocates of the Mobile plant, the amendment was withdrawn.

North Carolina Corn Demonstrations—1945

These farm demonstrations were based on the results obtained by the North Carolina Experiment Station and reported as Agronomy Information Circular 139. These experiments gave proof that 75 to 100 bushels of corn could be grown economically on many North Carolina soils when all the approved practices were carried out together with adequate fertilization.

In the spring of 1945 each county agent (white and negro) requested four farmers in his county to try all of the approved practices on one acre. This acre of corn was to be planted beside the farmer's corn which was to be fertilized and handled in the manner usually used on that farm. In order to prevent selecting exceptionally good land, it was specified that the demonstration be placed on land normally producing less than 30 bushels per acre with normal practices. It was suggested that one of the demonstrations in each county might be placed on better land in order to make observations at a higher fertility level.

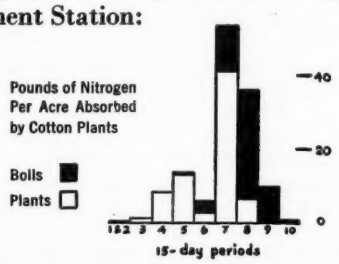
The following five steps were proposed for these demonstrations:

See page 25

Does your fertilizer have the patience to grow cotton?

COTTON requires a lot of nitrogen—but two-thirds of all the nitrogen it needs for full growth isn't absorbed until the fourth month.

Here's the way cotton plants absorb nitrogen, according to the Georgia Experiment Station:



This means that the nitrogen fertilizer applied at or before planting has to resist leaching and become readily available in large quantities when required by the plants.

Your fertilizer fits the crop when you use Urea Nitrogen

Urea nitrogen resists losses from leaching because of unique chemical changes that occur in the soil. Yet, unlike other leaching-resistant forms of nitrogen, urea is completely available to the plants.

That's why your fertilizer is ideally suited to cotton when you use urea nitrogen. You'll find that Du Pont UREA-AMMONIA LIQUORS give you a low-cost source of nitrogen and quick-curing mixtures that store well, drill well and have low acid reaction in the soil.

To meet the varying requirements of manufacturers, Du Pont supplies four UREA-AMMONIA LIQUORS and URAMON Fertilizer Compound. For further information, write E. I. du Pont de Nemours & Co. (Inc.), Ammonia Department, Wilmington 98, Delaware.

NITROGEN THAT FITS THE CROP

DU PONT UREA NITROGEN { **UREA-AMMONIA LIQUORS** • **URAMON** Reg. U.S. Pat. Off. **Fertilizer Compound**

DU PONT REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

1. Each farmer was furnished sufficient seed, of an *adapted hybrid*, to plant the acre. This corn was purchased by funds from the Plant Food Institute of North Carolina and Virginia.

2. Fertilizer at planting was to be fitted to the soil condition and past cropping history as follows: (1) In rotation with heavily fertilized crops such as tobacco and cotton, 200 to 300 lb. of 6–8–6 or 5–7–5; (2) in rotation with small grains and legumes for seed or where legumes are turned under, 300 to 500 lb. of 6–8–6 or 5–7–5; (3) in rotation with peanuts or legumes for hay, 300 to 500 lb. of 4–8–8.

3. It was specified that the corn be planted 16 to 21 inches apart in 3½ foot rows so that there would be enough ears to produce 50 to 75 bushels with an ear size of less than one-half pound each. Tests have shown that fertilizer is most efficiently used with this ear size.

4. Where available, a weeder was to be used until the corn was 6 to 12 inches high. Weeds were supposed to be controlled by *shallow* cultivation in the early part of the season and *no cultivation was to be done after the corn was 2½ feet high.* At no time was the cultivation supposed to be deep enough to injure many roots.

5. Side-dressing of 60 to 80 pounds of nitrogen* were suggested, as this amount is usually necessary to increase the yields 25 to 40 bushels per acre (approximately two pounds of nitrogen per bushel of corn). Any soluble source of nitrogen was considered satisfactory. Seventy-five to 100 pounds of muriate of potash was to be applied as a side-dressing on potash deficient soils or on soils where peanuts, hay, or legumes had been removed.

The suckers were not to be pulled on this acre. The ears produced on the suckers increased the yield in many instances.

*Supplied by 375 to 500 lb. of nitrate of soda; 290 to 390 lb. of sulphate of ammonia, calnitro or ANL; 190 to 250 lb. of ammonium nitrate.

At the time of this report, 273 demonstrations from 62 counties have been tabulated. The information is not complete on all of those reported, but the average of all figures reported is as follows:

	Test Acre	Farmers Acre	Differences
Yield per acre (bu.).	66.0	45.7	+20.3
Plants per acre.....	7,888	6,741	+1,147
Fertilizer value per acre.....	$15.57	$10.50	+$5.07

The results show that by the use of an adapted hybrid, using 1,147 more plants, and fertilizer worth $5.07 more, the yield was increased 20.3 bushels per acre. With labor, land charge and other costs approximately the same, the fertilizer cost was 25 cents per bushel.

The average fertilization of the test acre was equivalent to 470 pounds of a 6–8–6 and 315 pounds of nitrate of soda. This is about the equivalent of 100 pounds more 6–8–6 and 120 pounds more nitrate of soda than was used on the farmers regular corn.

The farmer used the equivalent of about 370 pounds of 6–8–6 and 194 pounds of nitrate of soda on the corn used as a comparison in the demonstrations. It is recognized that this much more fertilizer than is generally used on land which normally produces less than 30 bushels per acre.

It is assumed that a maximum normal farm practice is no more than the equivalent of 250 pounds of 3–12–6 and 200 pounds of nitrate of soda. Therefore, all demonstrations showing the use of more than 40 pounds of nitrogen on the farmers' corn are not considered as representing general farm practice. Similarly, the use of less than 75 pounds of nitrogen on the test acre was not in line with the purpose of the demonstrations.

Selecting demonstrations where no more than 40 pounds of nitrogen were used as a normal practice, and 75 or more pounds of

You'll Save Time and Money

in the manufacture of fertilizers of dependable quality and uniform grade when you use

International Crop-Producing FERTILIZER MATERIALS

Florida Pebble Phosphate Rock
68% – 70% – 72% – 75% – 77%
Tennessee Phosphate Rock
65% – 68% – 70% – 72%
Montana Phosphate Rock
Superphosphate
Multiple Superphosphate
Domestic Potash Salts
All Standard Grades of Potash
Including SUL-PO-MAG
(Sulphate of Potash-Magnesia)
Complete Fertilizers

These two things you can be sure of when you depend on International Fertilizer Materials — the quality of the ingredients and their excellent mechanical condition. Both are important to you in manufacturing costs and in the uniformity of your own fertilizers. You get, in addition, the advantages of International's large volume production and the prompt, efficient service from its conveniently located plants.

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nitrogen were used on the test acre, gives the following average results on 39 demonstrations from 25 counties:

	Test Acre	Farmers Acre	Differences
Yield per acre (bu.).	68.0	40.5	+27.5
Plants per acre.....	8,488	5,962	+2,526
Fertilizer value per acre.....	$16.93	$5.66	+$11.27

These results show that the fertilizer cost was 40.1 cents per bushel to increase the yield 26.6 bushels per acre. With corn valued at $1.40 per bushel, the $11.27 worth of fertilizer returned $38.50 worth of corn *when the other factors such as adapted seed, proper cultivation, and sufficient plants per acre were used.* These results would appear to economically justify the higher use of fertilizers, particularly nitrogen top-dressing, when used together with all approved corn production practices.

A series of farm fertilizer demonstrations on corn in North Carolina was conducted during 1945 by the N. C. Agricultural Extension Service, under the direction of E. R. Collins

Cotton Acreage Slightly Larger in 1946

The Crop Reporting Board of the U. S. Department of Agriculture has announced that 18,316,000 acres have been planted in cotton this year. This is about a half-million more than 1945 but over 7,000,000 less than the 1935–1944 average. Increases range from 16 per cent in Missouri to 2 per cent in North Carolina, with Virginia, Alabama, Mississippi, Arkansas, Louisiana, Texas and California also showing larger cotton acreage. In many sections, heavy rains delayed plantings and the crop in general is not as far advanced as is usual by this time of year.

CLASSIFIED ADVERTISEMENTS

Advertisements for sale of plants, machinery, etc., and for help and employment in this column, same type as now used, 60 cents per line, each insertion.

WANTED to purchase—outright or controlling interest in going fertilizer business. Address "205" care THE AMERICAN FERTILIZER, Philadelphia 3, Pa.

WANTED—Man with selling experience and general knowledge of fertilizer and feed industry, to help develop fertilizer department in established New York export and import company. Address "210" care THE AMERICAN FERTILIZER, Philadelphia 3, Pa.

Fertilizer Improves Arkansas Pasture

As a result of using 200 lb. per acre of 20 per cent superphosphate, W. A. Braden, of Benton County, Arkansas, was able to get 1,560 grazing days for mature dairy cows from an 18-acre pasture during the months of April, May and June. In addition he harvested a half-ton of hay per acre from the field during June, according to a report by County Agent P. R. Corley.

In addition to the fertilizer treatment, which he has used for the past three years, Mr. Braden attributes his success to a proper mixture of rye grass, Korean lespedeza and white clover, to control of weeds by constant mowing, and to controlled grazing whereby the grass is not pastured too short.

AGRICULTURAL RESEARCH AND THE FERTILIZER INDUSTRY

(Continued from page 8)

ades ago, as for example in the Middle West and Far West. You will recall that we agronomists of the Middle West were preaching the gospel of the all-sufficient lime-legume-manure-phosphate program at the time of World War I and it wasn't until we were convinced reluctantly by our own field experiments that we began recommending mixed fertilizers.

Many other changes in usage have occurred, among which may be mentioned the increased use of fertilizers on grassland, the marked improvement in methods of distribution, and the practical use of minor nutrient elements, all reflecting the results of research.

In view of this quite incomplete listing of accomplishments in the field of fertilizer use and technology, and in spite of the inhibitions of modesty, we of industry and government who have worked in this particular field are forced to admit a small share in the notable

See Page 20

production record achieved by American agriculture during the war.

Now, assuming that we are convinced that past research has greatly benefited both agriculture and the fertilizer industry, let us shift our sights to the future and pose two questions: (1) What stake if any has the fertilizer industry in a continuing aggressive program of agricultural research in its broader outlines? (2) Do important problems still exist in fertilizer use and technology that research might solve with benefit to the fertilizer industry?

Agricultural Research

In my opinion, the answer to the first question is found in the fact that most agricultural research not aimed directly at fertilizer use or technology, creates as a by-product increased opportunities for the profitable use of plant food. For example, whenever through research we are able to increase the potential yield of a crop by removing some limiting factor, whether it be climate, disease, insects, water, weeds or what not, we increase the plant food requirements of the crop and generally raise the level of profitable fertilizer use.

Hybrid corn has not only added 750 million bushels annually to the Nation's corn crop. It has also increased the total plant food required to grow the corn crop by an amount equivalent to five million tons of 12–4–8 fertilizer. Much of this increased requirement will be met by means other than commercial fertilizer, but the eventual effect can scarcely be other than a significant increase in demand for commercial plant food.

The effect of the new disease-resistant oat varieties is already evident on the fertilizer demands of the Middle West. This effect probably will increase with the spread of still better varieties such as Clinton, which is not only disease-resistant but stands up well under high nitrogen feeding. At a recent conference of midwestern agronomists and fertilizer industry representatives, the latter were urgently requested to make available a 10–20–0 for use on oats in the western corn belt. I shudder to think how the late Cyril G. Hopkins would have reacted to such heresy.

Even research that aims at increased efficiency in livestock production may create greater outlets for fertilizer. The control of animal parasites and diseases, the development of higher producing strains, the breeding of heat-tolerant cattle for the South, all tend to stimulate livestock production. More livestock require more feed, and more feed requires more plant food.

Research aimed at finding new uses for crops, such as cotton, peanuts, and soybeans, stimulates their production and is reflected in greater demands for plant food. The same is true for research on new crops. For example, research is rapidly placing the American tung industry on a sound economic footing and tung trees respond profitably to liberal fertilization.

In fact, all of this research tends to place the farmer in sounder economic position, and as the farmer profits, so does the fertilizer industry.

(To be continued in the next issue)

PHOSPHATE ROCK INDUSTRY IN 1945

(Continued from page 10)

plication to the soil and stock and poultry feed. Less is reported to have gone into the chemical uses in 1945 than in 1944. The quantity used for direct application to the soil is now over 400,000 tons a year and forms 7 per cent of total uses.

Prices

Maximum prices of Florida land pebble phosphate rock, Florida hard rock phosphate, and Tennessee brown phosphate rock for sales by miners are covered by *Revised Maximum Price Regulation 240* of July 1, 1944, effective July 6, 1944, and the later amendments. No changes were made in unground Florida land pebble or hard rock prices during 1945, but in February, 1945, (amendment 1) and again October, 1945, (amendment 4) price ceilings for unground Tennessee brown rock phosphate were raised.

Sales of Western States phosphate rock are under the General Maximum Price Regulation at individual ceilings, (C. C. Cran, Head Agricultural Chemicals Section, Food Price Division, office of Price Administration, Letter

April 22, 1946.) The Anaconda Copper Mining Company has established ceiling prices for Idaho phosphate rock, basis f.o.b. cars at Conda, Idaho, guaranteed average 32 per cent P_2O_5 (about 70 per cent B.P.L.) with no adjustment for grade as follows: Sales to superphosphate maunfacturers: Mine run bulk $4.75 per net ton; crushed undried bulk $5.00 per net ton; crushed and dried bulk $5.25 per net ton; pulverized bulk $5.90 per net ton. Sales to fertilizer mixers and dealers: pulverized bulk $6.75 per net ton; pulverized, in 100-lb bags $9.25 per net ton. Sales to consumers: pulverized bulk $7.75 per net ton; pulverized in 100-lb bags $10.25 per net ton.

It is reported that the Mountain Copper Company, Ltd., has established the same prices.

CEILING PRICES PER LONG TON OF FLORIDA AND TENNESSEE UNGROUND PHOSPHATE ROCK, F.O.B. CARS AT MINES, BY GRADES, 1945.

Grades—B.P.L. content (per cent)	Prices Florida		Tennessee		
			Brown Rock		
	Land pebble	Hard rock	Jan. 1 to Feb. 16	Feb. 17 to Oct. 14	Oct. 15 to Dec. 31
68–66...	$2.20	...	$4.50	$4.60	$4.80
70–68...	2.60	...	5.00	5.10	5.30
72–70...	3.20	$7.10	5.50	5.60	5.80
75–74...	4.20	7.85	...	...	...
77–76...	5.20	8.60	...	...	...

[1]Office of Price Administration Revised Maximum Price Regulation 240 and amendments.

The International Minerals and Chemical Corporation has established maximum prices for Montana phosphate rock, basis f.o.b. cars at Drummond or Hall, Montana, as follows:

Sales to fertilizer manufacturers: Mine run undried: $5.75 per net ton basis 70 per cent B.P.L. with 10 cents per unit rise/fall. Milled and dried: 72/70 per cent B. P. L.: —per $6.50 net ton basis 72 per cent B.P.L. with 10 cents per unit rise to 74 per cent max. and fall to 70 per cent min.; 75/74 per cent B.P.L.—$7.00 per net ton basis 75 per cent B.P.L. with 15 cents per unit rise to 76 per cent max. and fall to 74 per cent min.; 77/76 per cent B.P.L.—$7.50 per net ton basis 77 per cent B.P.L. with 20 cents per unit rise and fall to 76 per cent min.

Review By States

Florida

A new record for the total quantity of Florida phosphate rock sold or used in any one year—4,238,228 long tons. 485,433 tons greater than in 1944—was set in 1945. The total value of this rock, $16,298,474, was nearly three million dollars greater than that of the phosphate rock sold or used in 1944, but was still much below the record value of 1920 ($19,464,362). Increases in the quantities sold or used and the values of all the component types of Florida rock—hard rock, land pebble, and soft rock—were recorded in 1945 over 1944 The total average value per ton and the average values of hard rock and land pebble were higher in 1945 than 1944, but the average value per ton to soft rock, as reported by the producers was less in 1945 than in the preceding year.

FLORIDA PHOSPHATE ROCK SOLD OR USED BY PRODUCERS, 1941-45, BY KINDS, IN LONG TONS

Year	Hard rock	Soft rock	Land pebble	Total
1941....	38,116	47,750	3,279,706	3,365,572
1942....	70,014	48,470	2,893,756	3,012,240
1943....	34,128	71,171	3,483,194	3,588,493
1944....	22,500	60,087	3,670,208	3,752,795
1945....	63,491	71,715	4,103,022	4,238,128

[1]Includes material from waste-pond operations.

Three companies were operating in the hard-rock phosphate field in 1945, although mining was being carried on only at the Section 12 mine, operated jointly by C. & J. Camp, Inc. (P.O Box 608, Ocala, Florida) and J. Buttgenbach & Co. (P.O. Box 67, Lakeland, Florida), about three miles southeast of Dunnellon. The other company, the Dunnellon Phosphate Mining Co. (P.O. Box 157, Savannah, Georgia), did not operate its mines in Citrus County, near Hernando, which it reports is shut down for an indefinite period, but made some shipments from stock for export.

During the fiscal year ended June 30, 1945, the Federal Trade Commission completed its

investigation of the Florida Hard Rock Phosphate Export Association, which it had ordered in 1944 under the Webb-Pomerene Law (Export Trade Act), and issued recommendations for the readjustment of the business of the Association.

The investigation of the Phosphate Export Association by the Federal Trade Commission, instituted in August, 1944, under the provisions of the Export Trade Act (Webb-Pomerene Law) was completed early in 1946, and its recommendations to the Phosphate Export Association were released March 12, 1946.

On October 12, 1945, the Phosphate Export Association announced its dissolution on October 11, 1945, and stated that each of the member companies would thereafter conduct its own export business in phosphate rock.

Seven companies were mining and shipping land-pebble phosphate rock in 1945. These were the American Cyanamid Co. (Brewster): American Agricultural Chemical Co. (Pierce): Coronet Phosphate Co. (Plant City): International Minerals & Chemical Corporation (Mulberry); Phosphate Mining Co. (Nichols): Southern Phosphate Co. (Ridgewood): and Swift & Co. Fertilizer Works (Agricola): The Pembroke Chemical Corp. (Pembroke, Florida) did not mine any land pebble in 1945, but did dry material from its wet rock stocks which it exported together with previously dried rock. The Virginia-Carolina Chemical Corporation purchased as of June 1, 1945, practically all of the capital stock of the Phosphate Mining Co. The New York office of the latter company was discontinued, and the head office moved to Richmond, Va., to the executive offices of the new parent corporation.

The entire capital stock of The Ore & Chemical Corporation, of New York, (2,000 shares of preferred and 2,000 shares of common), owner of 355 shares of the Pembroke Chemical Corporation or 39.44 per cent of the 900 issued and outstanding shares, was vested by the Alien Property Custodian, Metalgesellschaft, A.G., Frankfurt, Germany, having been indicated to have held directly or indirectly a dominant interest, and was sold in 1945 to Mr. B. R. Armour, Englewood, New Jersey. Thirty-five additional shares of the Pembroke Chemical Corporation (3.89 per cent of the outstanding capital stock), also vested by the Alien Property Custodian, were sold to the Ore & Chemical Corporation early in 1946.

The Victor Chemical Works, already a large producer of elemental phosphorus in the Tennessee brown-rock phosphate field, has announced an expansion of its elemental phosphorus producing facilities by the proposed erection of a new electric furnace plant on tidewater on Anclote River, near Tarpon Springs, northwest of Tampa, Florida. Phosphate rock from the land-pebble field will be used as the source of the phosphorus.

Tennessee

The tonnage of phosphate rock sold or used by Tennessee producers in 1945 (plus a small quantity of apatite from Virginia) was about thirty thousand tons less than in 1944, according to reports from the producing companies. The phosphate rock sold or used was brown rock except for the Virginia apatite, and a small tonnage of Tennessee blue rock. Although the tonnage sold or used decreased in 1945, the total value was greater than in 1944, the average value increasing from $4.51 in 1944 to $4.68 in 1945.

TENNESSEE PHOSPHATE ROCK (INCLUDING SINTERED MATRIX) SOLD OR USED BY PRODUCERS, 1941–45 (INCLUDES APATITE FROM VIRGINIA).

Year	Long tons	Year	Long tons
1941.....	1,120,358	1944[1].....	1,324,849
1942[1].....	1,366,335	1945[1].....	1,294,297
1943[1].....	1,309,059		

[1]Includes small quantity of blue rock.

Tennessee brown rock phosphate was mined in 1945 by the Tennessee Valley Authority (Columbia, Tenn.) and by several private companies: Armour Fertilizer Works, (Room 350 Hurt Building, Atlanta, Ga.), Federal Chemical Co. (634 Starks Building, Louisville, Ky.), Harsh Phosphate Co. (Route 4, Murfreesboro Road, Nashville, Tenn.), Hoover & Mason Phosphate Co. (8 South Michigan Avenue, Chicago, Ill.), International Minerals & Chemical Corp., (20 North Wacker Drive, Chicago, Ill.), Monsanto Chemical Co., (1700 South Second Street, St. Louis, Mo.), and Virginia-Carolina Chemical Corp. (Richmond, Va.). Sales of blue rock are reported to have been made by George E. Sloan, Columbia, Tenn.

Virginia

In 1945, apatite was produced from the Piney River nelsonite deposit by the Calco Chemical Division of the American Cyanamid Co. The company became a shipper in February, 1945, after the superphosphate plant was shut down and dismantled.

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